

REMARKS

Reconsideration and allowance of the above-referenced application are respectfully requested. No new matter has been added.

35 USC § 103

Claims 1, 2, 4–11 and 26 stand rejected under 35 USC § 103(a) as allegedly being unpatentable over Chin (7,184,143). These rejections are respectfully traversed.

Chin teaches a system that detects fluorescence signals generated in a sample by a femtosecond terawatt (fs-TW) laser radiation source. However, Chin fails to teach or otherwise suggest a system that, in addition to detecting the fluorescence signals, also detects infrared absorption and light scattering signals generated in the atmosphere by a fs-TW laser. Claim 1 has been amended to claim such a system.

In particular, Claim 1 has been amended to add the further limitation that the detection and analysis unit comprise both an infrared spectrometer and a UV/VIS spectrometer. While Chin describes the use of a spectrometer to detect fluorescence, the addition of the infrared spectrometer gives the system the added capability of detecting infrared absorption channels and light scattering channels, including Rayleigh, Mie and Raman scattering. By detecting the infrared absorption and light scattering channels, the system achieves greater reliability than would otherwise be achieved by measuring only the fluorescence of the sample. Nothing in Chin suggests such a limitation to one skilled in the art.

Claims 12–17 and 19–25 stand rejected under 35 USC § 103(a) as allegedly being unpatentable over Chin and in further view of Patzwald. These rejections are respectfully traversed.

The Office states that “it would have been obvious to have adapted the device of Chin to 237 nm [*sic*] when seeking to find molecules that are fluorescent at lower wavelengths.” However, Chin teaches away from adapting the device to find molecules that are fluorescent at lower wavelengths. According to Chin, “detecting different molecules” using “different lasers with different output wavelengths ... causes difficulties.” (Column 1, lines 36–39). Instead, Chin teaches using only *one* laser with *one* wavelength to detect *all* pollutant molecules. (Column 7, lines 25–26). In particular, Chin teaches the use of NIR femtosecond laser pulses with a central wavelength of approximately 800 nm to detect all pollutants.

Claims 12, on the other hand, claims a method utilizing UV femtosecond laser pulses operating at a central wavelength of approximately 267 nm to detect all pollutant molecules. According to the instant specification, these laser pulses propagate with much lower losses up to several km through the plasma channel when compared to NIR femtosecond laser pulses. (Page 6, lines 9–12).

Nothing in Chin gives a skilled artisan a motivation to replace Chin's NIR femtosecond laser at approximately 800 nm with a UV femtosecond laser at approximately 267 nm. Based on Chin, a skilled artisan would have no reason to expect that using a UV femtosecond laser at a center wavelength of 267 nm would achieve the result that Chin teaches: using only *one* laser with *one* wavelength to detect *all* pollutant molecules.

Furthermore, Patzwald teaches an “illumination device [that] has radiation sources whose radiation completely covers the UV, VIS and IR wavelength regions.” (Column 4, lines 13–16). Patzwald's broad range presents the situation described in Section § 2144.05 of the MPEP as follows: “[I]f the reference's disclosed range is so broad as to encompass a very large number of possible distinct compositions, this might present a situation analogous to the obviousness of a

species when the prior art broadly discloses a genus." Patzwald discloses a broad range analogous to a genus (the entire range of UV, Visible and Infrared wavelengths), while Claim 12 covers a wavelength that is analogous to a species (a spectral range approximately centered at 267 nm). Although Patzwald's range encompasses the wavelength of Claim 12, a person with ordinary skill in the art would not have been motivated by Patzwald to select this particular wavelength to modify the method disclosed by Chin. (See MPEP § 2144.08, II.A.4). Patzwald's range is just too broad considering the technology at issue: the utilization of fs-TW laser pulses to analyze particles in the atmosphere. Indeed, neither reference expressly teaches a particular reason to select the claimed wavelength, and it would require undue experimentation to find this optimal wavelength of fs-TW laser pulses to analyze the spectral signatures of constituents in the atmosphere.

As a result, it is respectfully submitted that this application is now in condition for allowance.

Concluding Comments

It is believed that all of the pending claims have been addressed in this paper. However, failure to address a specific rejection, issue or comment, does not signify agreement with or concession of that rejection, issue or comment. In addition, because the arguments made above are not intended to be exhaustive, there may be reasons for patentability of any or all pending claims (or other claims) that have not been expressed. Finally, nothing in this paper should be construed as an intent to concede any issue with regard to any claim, except as specifically stated in this paper, and the amendment of any claim does not necessarily signify concession of unpatentability of the claim prior to its amendment.

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Please change the attorney reference number to: Attorney's Docket No.: 35690-501. The Commissioner is hereby authorized to charge any additional fees that may be due, or credit any overpayment of same, to Deposit Account No. 50-0311, Reference No. 35690-501.

Respectfully submitted,



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